

PASCAULT, Jean Pierre, et al.

USSN: 09/937,551

REMARKS

The Examiner rejected Claims 1-28 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. In particular, the Examiner states that whether the trademark "Cardura E10" is meant to further limit "methacrylate" or is mere surplusage. The Applicants traverse as follows.

The term "Cardura E 10" is to be considered as a limitation of methacrylate, in that it corresponds to a specific residue of a known epoxy currently used under this conventional name well known and identifiable as such by one skilled in the art. It is not a tradename or trademark which cannot be identified. On the contrary, one skilled in the art knows that it does represent as a chemical structure and product (see attached documents as known to one skilled in the art: technical notice and CA INDEX identification). Claim 1 has been amended to include the registry number to more distinctly claim the subject matter of the invention. No new matter is added because the registry number is an inherent property of the identified compound.

The Examiner rejected Claims 1-19 under 35 U.S.C. § 102(b) as being anticipated by, all in the alternative, under 35 U.S.C. § 103(a) as obvious over, GB 2,178,048 A ("GB '048"). The Applicants respectfully traverse the Examiner's rejections.

The Applicants believe that the Examiner's rejections under §102(b) are in error because the Examiner has failed to meet the standards of anticipation. In order for the subject matter of a claim to be anticipated under 35 U.S.C. §102, the prior art reference must teach every aspect of the claimed invention either explicitly or implicitly, i.e., any element not directly taught must be inherently present. See, e.g., *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 231 USPQ 81, 90 (Fed. Cir. 1981) ("it is axiomatic that for prior art to anticipate under §102 it has to meet every element of the claimed invention, and that such a determination is one of fact."); MPEP §706.02. Moreover, inherency may not be established by possibilities or probabilities but, rather, the evidence must show that the inherent property or element is a necessary and inevitable result of the teachings of the prior art reference. See e.g., *Interchemical Corp. v. Watson*, 111 USPQ 78, 79(d) (D.C. 1956), *aff'd*, 116 USPQ 119 (D.C. Cir. 1958); MPEP §2112.

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Given that the allylic (meth)acrylate is expressly excluded in Claim 1, then the novelty objection is not founded.

Likewise, when viewed in its entirety, the teachings of GB '048 do not render obvious the subject matter of the current claims. The multifunctional crosslinking agent disclosed in GB '048 is an allylic methacrylate which functions completely differently with respect to the crosslinking agent of the present invention. In our case, the microparticles are internally crosslinked during the polymerization step to form the claimed crosslinked microparticles. In contrast, in the case of GB '048, the allylic methacrylate is only incorporated by the methacrylic group into the polymer chain with the allylic group still remaining free and unreacted on the polymeric particle under formation. Normally, the aim of GB '048 is to obtain crosslinkable compositions based on these particles (which are not crosslinked as such).

The microparticles of GB'048 are not crosslinked during copolymerization but, rather, are crosslinked during a separate step in the context of using it in a toner material. This is explicitly disclosed in GB'048, page 1, lines 62-64 (copolymerization and crosslinking reaction separately) as in page 2, lines 15-45, where the detailed structure of the linear (non-crosslinked) copolymers is disclosed. In fact, it is clearly explained in these formula that only grafted copolymers could be obtained by subsequent polymerization of MMA with the linear copolymer E of the first step, bearing free allylic grafts. Not any indication of crosslinking is suggested in these structures, but only of grafting (no possible crosslinking during copolymerization of allylic groups reaction).

In fact, the aim of GB'048 is to obtain separately crosslinkable copolymer microparticles by the intermediate of the pending free allylic groups. As demonstrated, these groups can not react during copolymerization (only grafting possible as shown by GB'48, page 2, lines 30-45).

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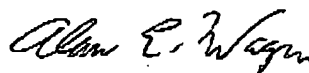
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However, the presence of pending free allylic groups on the surface of the copolymer microparticles does not exclude an interparticular reaction which will lead to interparticular crosslinking and flocculation of the dispersion during the copolymerization or during the storage of these dispersions.

No fee or petition is believed due. In the event that a fee or petition is due, authorization is given here to charge Deposit Account No. 23-2053 in the appropriate amount for such fee or petition.

The Examiner is invited to call the Applicant's attorney in the event that such communication would facilitate allowance of the application.

Respectfully submitted,



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Shell Resins

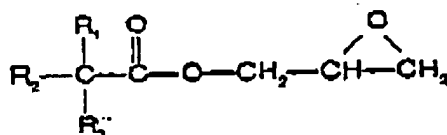
Cardura E10

Cardura
Technical Manual
CA 1.1
3rd Edition

Data Sheet
Reprinted October 1990

INTRODUCTION

Cardura E10 is the glycidyl ester of Versatic 10, a synthetic saturated monocarboxylic acid mixture of highly branched C₁₀ isomers. Its structure may be represented as:



where R₁, R₂ and R₃ are alkyl groups of which at least one is methyl. Cardura E10, a mobile liquid monomer with a mild odour, is a very attractive intermediate for the manufacture of alkyds, polyesters, acrylics and other polymers and in other chemical syntheses via reactions of the epoxide group.

SALES SPECIFICATION

Property	Test method	Unit	Value
Appearance	Visual		Clear liquid, free from suspended matter
Colour	ISO 2211	Pt-Co scale	100 max (typically <60)
Density at 20°C	ISO 3675	kg/l	0.958-0.968
Refractive index, n _D ²⁰	SMS 473		1.441-1.447
Water content	ASTM E203	% m/m	0.1 max
Epoxy group content (Epoxy molar mass ^a)	SMS 2026	m mol/kg	3900-4100
		g	244-256

^agrams of resin containing 1 g-equivalent of epoxide

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TYPICAL PROPERTIES

Property	Test method	Unit	Value
Molecular formula (theoretical)			$C_{11}H_{16}O_4$
Viscosity at 25°C	ASTM D445	mPa.s	7.13
at 100°C		mPa.s	1.31
at 125°C		mPa.s	0.94
at 150°C		mPa.s	0.72
Density at t°C (when 15°C ≤ t ≤ 40°C)	ISO 3675	kg/l	0.9760-0.00063 t
Vapour pressure at 37.8°C	ASTM D123	kPa	0.9
Specific heat at 25°C (DSC)		kJ/kg°C	1.733
Boiling range 5%-90% v/v at 101.3 kPa	ASTM D86	°C	251-278
Flash point (PMCC)	ASTM D93	°C	126
Solidification point	ASTM D97	°C	below -60
Solubility of Cardura E10 in water at 20°C		% m/m	0.01
Solubility of water in Cardura E10 at 20°C		% m/m	0.7
Thermal conductivity at 25°C		W/m °C	0.142
Free epichlorohydrin	GC*	mg/kg	10 max

*Gas chromatography

Test methods

ASTM Standards are published by the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa 19103, USA.

SMS methods mentioned in this document are issued by Shell Internationale Research Maatschappij B.V., The Hague, The Netherlands.

ISO Standards are published under the supervision of the International Standards Organisation and are available from National Standards Institutes.

APPLICATIONS

A principal use of Cardura E10 is as an intermediate for the production of high performance paint media, in particular a range of non-drying alkyds, Cardura resins. It may also be used in the production of other types of resins, as a constituent of alkyds and Epikote resin esters containing other fatty acids, for the reduction of the acid value of conventional alkyds, as a reactive diluent for epoxy resins, and in the synthesis of other chemical compounds.

GENERAL INFORMATION

Storage

Cardura E10 is slightly hygroscopic and in certain types of resin cook, for example in preparing resin formulation reference Cardura 30, the presence of water in the Cardura E10 would cause the dicarboxylic anhydride to react preferentially with water, leading to undesirable low molecular weight fractions in the final resin. Cardura E10 must therefore be stored ensuring that no water is introduced into the material even from contact with atmospheric moisture.

Drums

Cardura E10 supplied in mild steel drums should be stored in dry conditions, away from sources of heat, naked flames and sparks, preferably in the original containers kept tightly closed. Any partially used drum should be tightly reclosed immediately after drawing-off material.

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Bulk storage

Storage tanks for Cardura E10 may be of stainless steel, aluminium or mild steel, either unlined but cleaned free of millscale, etc. or lined with a two-pack Epikote resin based paint or a zinc silicate paint: the paints should be approved for this service. The tank must be fitted with suitable means of keeping the space above the material filled with dry air or dry nitrogen at all times.

Lines should be of stainless steel, aluminium or clean mild steel.

Hoses should be of stainless steel or polypropylene.

Joints should be of compressed asbestos fibre. (Note that the manufacturer's instructions on safe handling must be observed when handling asbestos-fibre components).

Pumps and valves should be of stainless or mild steel; components made of copper or copper alloys should not be used.

Before a tank is filled, it must be clean and thoroughly dried, e.g. by blowing out with dry air.

Recommended maximum storage temperature 60°C

Recommended minimum storage temperature 5°C

Recommended maximum storage time 1 year

Handling and safety

Cardura E10 is irritating to the skin and eyes and may cause sensitisation by skin contact. Protective clothing including gloves and goggles or face shield should be worn when handling the material. Any accidentally contaminated skin areas should be washed with soap and water; solvents should not be used for cleansing the skin. If any material is splashed into the eyes, they should be flushed immediately with plenty of water and medical advice sought as a precautionary measure. Contaminated clothing should be removed and laundered before re-use.

Care should be taken to avoid the inhalation of any vapours of the material particularly when heated during resin manufacture.

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REGISTRY COPYRIGHT 2003 ACS on STN

RN 26761-45-5 REGISTRY

CN Neodecanoic acid, oxiranylmethyl ester (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN 1-Propanol, 2,3-epoxy-, neodecanoate (8CI)

CN Neodecanoic acid, 2,3-epoxypropyl ester (8CI)

OTHER NAMES:

CN Cardura E 10

CN Cardura E 10P

CN Cardura E 10S

CN Epoxide 248

CN Glycidyl neodecanoate

CN Glydaxx N 10

MF C13 H24 O3

CI IDS, COM

LC STN Files: BIOSIS, CA, CAPLUS, CHEMCATS, CHEMLIST, MSDS-OHS, NIOSHTIC,

RTECS*, TOXCENTER, USPAT2, USPATFULL

(*File contains numerically searchable property data)

Other Sources: DSL**, EINECS**, TSCA**

(**Enter CHEMLIST File for up-to-date regulatory information)



206 REFERENCES IN FILE CA (1907 TO DATE)

117 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

206 REFERENCES IN FILE CAELOS (1907 TO DATE)